

Abstract

Method for producing a deep trench capacitor in a semiconductor substrate

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The present invention provides a method for producing a deep trench capacitor in a semiconductor substrate (1) comprising the steps of: providing a first trench (2) in the semiconductor substrate (1); oxidizing the semiconductor substrate (1) in the first trench (2) for providing an oxidized silicon layer (3); depositing a conformal aluminium-oxide layer (4) in the first trench (2); removing the horizontal regions (5) of the deposited aluminium-oxide layer (4) and the oxidized silicon layer (3); providing a second trench (6) underneath the first trench (2); increasing the width of the second trench (6) to a widened second trench (7) for providing a bottle structure (8); depositing a dielectric layer (10) in the widened second trench (7) and filling the widened second trench (7) with a conductive filling (11).

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(Fig. 2h)